

Application No. 10/790,178
Reply to Office Action of September 30, 2005

Docket No.: K2020.0004/P004

REMARKS

The application has been reviewed in light of the Office Action mailed on September 30, 2005. Claims 3 and 4 have been canceled. Claims 1, 2, 5-7, 10 and 15-17 have been amended and new claim 19 has been added without adding new matter. Claims 1, 2 and 5-19 are now pending application. Reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

Claims 15-17 are objected to due to informalities. In particular, the Office Action suggests that the phrase "any one of" in claims 15-17 be deleted. Applicants have amended claims 15-17 as requested.

Claims 1-10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Lesyna et al., U.S. Patent No. 5,260,581 ("Lesyna"). Reconsideration is respectfully requested.

Claim 1 has been amended to further distinguish over Lesyna. Amended claim 1 now recites a particle beam therapy system that comprises two types of manual input devices. According to claim 1, the system comprises a "plurality of first manual input devices provided correspondingly to said plurality of treatment rooms for generating irradiation ready signals, respectively." Moreover, claim 1 recites a "plurality of second manual input devices provided correspondingly to said plurality of treatment rooms for generating irradiation start signals, respectively." Support for this amendment can be found, for example, on page 18, lines 14 - 23 of the specification. The claimed invention is not limited to the disclosed embodiments.

Claim 1 also recites a "control system" for "deciding the sequence of introducing the charged particle beam to said plurality of treatment rooms based on

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said respective irradiation ready signals corresponding to said treatment rooms generated by said first manual input devices, and forming the beam paths for introducing the charged particle beam, emitted from said charged particle beam generator, to the respective irradiation units in said treatment rooms in accordance with the decided sequence." Support for this amendment can be found, for example, on page 21, line 20 – to page 23, line 3 of the specification.

In addition, claim 1 has been amended to recite "an emission start control unit for outputting an emission start signal based on said irradiation start signal generated by said second manual input device corresponding to said treatment room with top priority to which the charged particle beam is to be first introduced, after said beam path for introducing the charged particle beam to the irradiation unit in said treatment room with top priority has been formed by said control system." Support for this amendment can be found, for example, on page 61, line 14 – to page 62, line 18 of the specification.

The invention of amended claim 1 offers numerous advantages over the prior art. For example, due to the manual input devices and the control system, the time and labor imposed on an operator of the system can be reduced to a large extent. In use, for example, when making preparations for irradiation in one treatment room, it is possible to flexibly advance such preparations without the need for taking into account situations in other treatment rooms.

In other words, due to the system of the claimed invention, presetting of the irradiation sequence for respective treatment rooms, and transporting the beam in accordance with the preset sequence, can be avoided. In accordance with the claimed invention, treatment in a room in which the preparations for irradiation are lasting longer than expected, or the patient's condition has worsened, for example, can be

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automatically delayed in favor of another room in which a patient has already been brought into an irradiation ready state.

With such flexibility, wasteful waiting time can be reduced and the therapy system can be utilized at its maximum efficiency. Hence, treatment can be smoothly conducted on a larger number of patients and at a higher efficiency. Other advantages include the fact that presetting of the irradiation sequence and schedule is not always required, and the schedule can be changed with ease and flexibility. This means that the time and labor required for the operator during the treatment can be reduced.

The claimed manual input devices in combination with the emission start control unit also offer many advantages over the prior art. For example, the decision whether or not to start the irradiation can take place at a point in time immediately before the preparations for transport of the charged particle beam in the relevant beam transport system are completed. As a result, the irradiation can be canceled, in a flexible way, at any point in time until just before the start of the irradiation. This flexibility allows to take account, for example: the patient's condition to ensure that the patient is allowed to receive the irradiation treatment; whether or not the patient's condition has worsened; or whether or not the patient needs a restroom break. Hence, the irradiation treatment can be performed on each patient in a safe and prudent manner without problems, and taking into account many considerations.

Lesyna fails to teach or suggest these limitations. Lesyna fails to teach or suggest two types of manual input devices recited in amended claim 1. Specifically, Lesyna fails to teach or suggest "first manual input devices" for "generating irradiation ready signals," and "second manual input devices" for "generating irradiation start signals."

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Lesyna fails to teach or suggest the claimed "control system" for "deciding the sequence of introducing the charged particle beam to said plurality of treatment rooms based on said respective irradiation ready signals corresponding to said treatment rooms generated by said first manual input devices, and forming the beam paths for introducing the charged particle beam, emitted from said charged particle beam generator, to the respective irradiation units in said treatment rooms in accordance with the decided sequence."

Moreover, Lesyna fails to teach or suggest the claimed "emission start control unit" for "outputting an emission start signal based on said irradiation start signal generated by said second manual input device ... after said beam path for introducing the charged particle beam to the irradiation unit in said treatment room with top priority has been formed by said control system."

To the contrary, in Lesyna the treatment room beam request signal is such that a beam path for introducing a charged particle beam to the irradiation unit in the treatment room is formed by the treatment room beam request signal. See, for example, column 7, lines 39 – column 8, line 33, and Figure 5. In Lesyna, when the treatment room beam request signal is in agreement with the beam path configuration signal, the beam is authorized to the selected treatment room, whereas when the treatment room beam request signal is found to be not in agreement with the beam path configuration signal, the beam is denied to the selected treatment room. See, for example, column 5, lines 44 – 61, Figures 3 or 4.

Lesyna fails to disclose a division of functions and/or roles offered by the claimed invention. Lesyna fails to teach or suggest a system wherein an "irradiation ready signals" generated by a "first manual input device" serve for the control system to function as recited in claim 1. Lesyna also fails to teach or suggest that "irradiation

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start signals" generated by a "second manual input device" serve for the emission start control unit function as recited in claim 1. Further, the treatment room beam request signal in Lesyna does not correspond to either of the claimed "irradiation ready signal" or the "irradiation start signal."

For at least the foregoing reasons, amended claim 1 is allowable over Lesyna. Claims 2, 5, 6 and 7 have been amended similar to claim 1, and are allowable for similar reasons. Dependent claims 8-10 should be allowed together with their base claims. (Claims 3 and 4 have been cancelled.)

Claims 11-17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lesyna. This rejection is respectfully traversed. Claims 11-17 depend from independent claims 1, 2, 5, 6 and 7 and incorporate every limitation of their base claims. As discussed above, claims 1, 2, 5, 6 and 7 are allowable over Lesyna, and claims 11-17 should be allowed with their base claims.

Applicants acknowledge with appreciation the indication that claim 18 is allowable. The Office Action states, however, that claim 18 would be allowed if rewritten in independent form. Applicants wish to point out that claim 18 is an independent claim, and therefore is considered to be in condition for allowance.

New method claim 19 has been added. Claim 19 recites, inter alia, the steps of "selecting said plurality of treatment rooms in the order in which respective irradiation ready signals corresponding to said treatment rooms have been generated by first manual input devices," and "outputting an emission start signal based on an irradiation start signal generated by a second manual input device." Lesyna fails to teach the limitations recited in claim 19, and claim 19 is believed to be allowable.

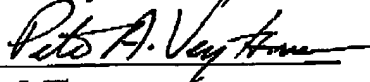
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In view of the above amendments and remarks, Applicants believe that the pending application is in condition for allowance.

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